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REPORT OF PINE BEETLE SURVEY ON THE WALLOWA NATIONAL FOREST SEASON OF 1940

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Forest Insect Investigations

April 11, 1941

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Portland, Oregon

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ON THE

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SEASON OF 1940

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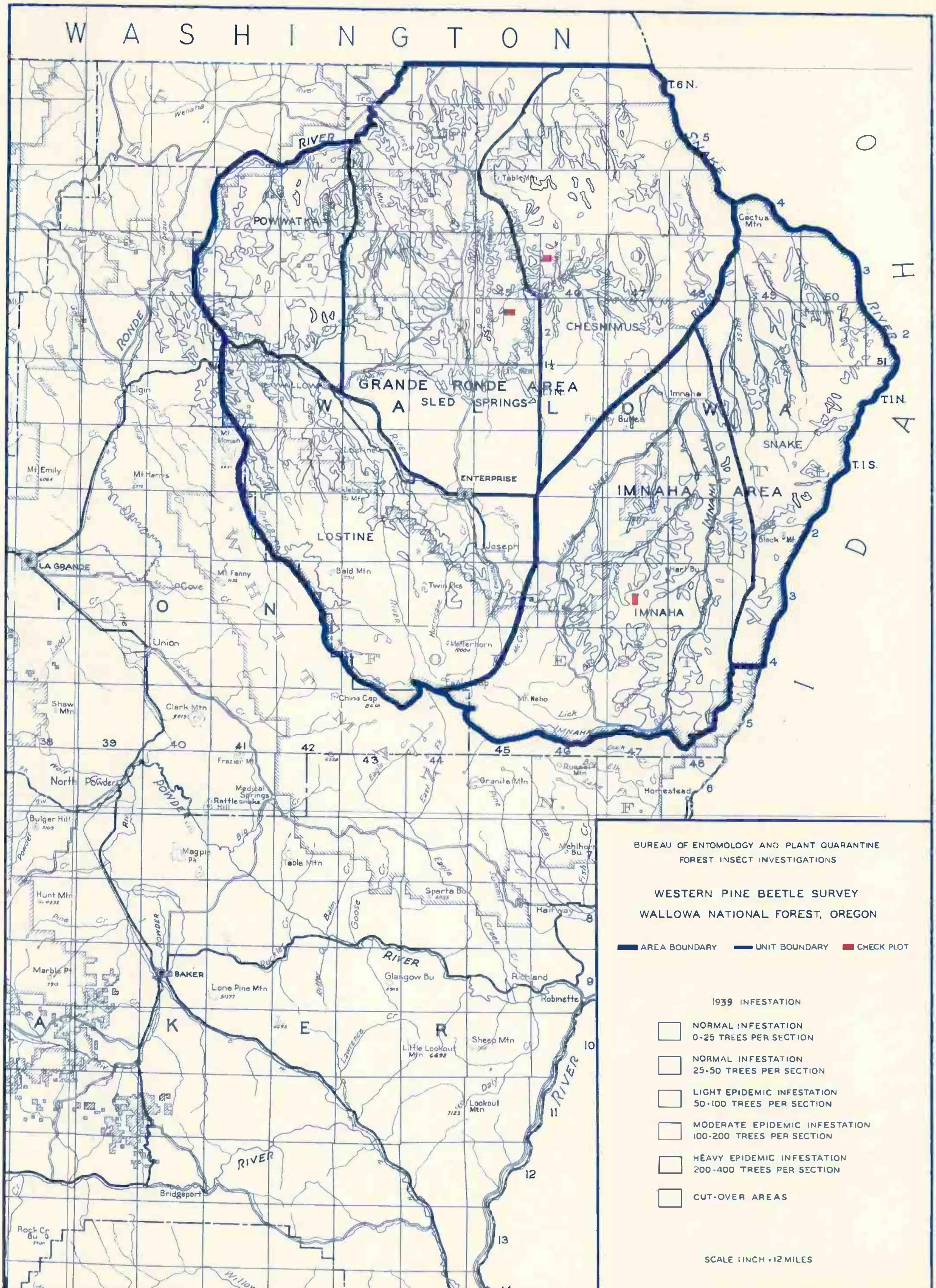

WASHINGTON
IDAHO
T.6 N.
T.1 N.
T.1 S.
SNAKE
RIVER
GRANDE RONDE AREA
IMNAHA AREA
POWWATKA
CHESNIMUS
SLED SPRINGS
LOSTINE
IMNAHA
WALLOWA
ENTERPRISE
Joseph
Elgin
LA GRANDE
Union
Cove
North Powder
BAKER
Richland
Robinette
Halfway
Bridgeport
Homestead
Table Mtn
Cactus Mtn
Mt Emily
Mt Harris
Mt Fanny
Bald Mtn
Twin Pks
Matterhorn
China Cap
Mt. Nebo
Clark Mtn
Shaw Mtn
Frazier Mt
Medical Springs
Rattlesnake Hill
Bulger Hill
Magpie Pk
Table Mtn
Sparta Bu
Hunt Mtn
Marble Pt
Lone Pine Mtn
Glasgow Bu
Little Lookout Mtn
Sheep Mtn
Lookout Mtn
Rock Cr Bu
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Russell Mtn
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Introduction

The fourth consecutive survey of forest insect conditions in the ponderosa pine stands within and adjacent to the Wallowa National Forest was conducted during the period August 12 to 14 inclusive, 1940. These surveys have been carried on through the cooperative efforts of the Bureau of Entomology and Plant Quarantine and the Forest Service.

The purposes of the surveys are (1) to determine the yearly trend, intensity, and distribution of the western pine beetle (Dendroctonus brevicomis Lec.) and associated destructive insects; (2) to ascertain the need for artificial control measures and to study the results of such work as was undertaken; (3) to determine the type of tree most susceptible to beetle attack and location of the high hazard areas that warrant first consideration in timber management plans.

The survey was again both intensive and extensive in character. A crew of three field aides, R. F. Goodall assisted by O. R. Gregory and H. J. Ostlind, were employed by the Forest Service to carry on the intensive phase of the survey. This consisted of making a 100-percent cruise of current beetle losses on three 320-acre check plots. A description of these plots is given in Table No. 1. Their locations on the forest are shown on Map No. 1.

The writer supervised the activities of the crew and carried out the extensive phase of the survey. This consisted of making an observational reconnaissance of all the pine type which covers some 427,320 acres with a stand of approximately 1,684,700 M.B.M.

From the combined data of these methods estimates were made of the 1939 loss on the forest as a whole. These estimated losses are presented by areas and units in Table No. 4. Their intensity and distribution on the forest are shown graphically on Map No. 2.

Past Losses

Aided by climatic conditions unfavorable to tree growth, a quiescent infestation of the western pine beetle assumed an upward trend about 1930 and soon became epidemic on certain portions of the forest. The infestation reached its greatest intensity during 1932. This upward trend was arrested during the winter of 1932-33 by extreme subzero temperatures that caused widespread mortality to overwintering broods of this bark beetle. Conditions became more favorable to tree growth and the infestation continued to decline, reaching a low point in 1936. During 1937 the infestation again assumed an upward trend.

Recent Losses from the 1940 Survey

The 1940 survey completed the 1939 loss data on the check plots and gave preliminary information on the 1940 infestation trend. These data are presented in Table No. 2. As less than 37 percent of the total 1940 loss had developed at time of survey the probable total was estimated by employing an estimating factor developed from past surveys. Although subject to considerable error it does give an indication of the 1940 loss trend.

The infestation trends on check plots for the three-year period 1938-40 are given in Table No. 3. These data show that the infestation, which had assumed an upward trend through 1937, became aggressive during 1938, killing .85 percent of stand on check plots. This aggressive increase was followed by a pronounced decline during 1939, losses decreasing to .33 percent of stand, which is the lowest since the surveys began in 1937 and probably the lowest since the present epidemic cycle began. Indications are that the 1940 trend was upward, with losses estimated to be .46 percent of stand.

General Infestation Conditions During 1939-1940

The pine beetle situation was found to be much better than at any time since the surveys began in 1937. The decline of infestation during 1939 as shown by the plot data was reflected over the entire forest. At higher elevations little infestation existed and at lower elevations only normal infestations were found to exist where light epidemics had prevailed during 1938.

The upward trend of infestation during 1940 as indicated by plot data was especially noticeable on the Sled Springs area between Swamp and Crow Creeks, where group killings indicated the infestation was again assuming aggressive tendencies. Some increase was also noted southwest of Viewpoint on this unit.

Insect Activity Affecting Other Tree Species

The insect situation in the fir stands of the forest also improved considerably. Less killing was noted in the aggressive center present during 1938 in the fir stands around Fairchild Lookout.

Little insect activity was noted affecting other tree species on the forest.

Recommendations

No centers of infestation sufficiently aggressive to warrant control measures were discovered on the forest during 1940.

Summary

The fourth consecutive survey of the pine beetle situation in the ponderosa pine stands within and adjacent to the Wallowa National Forest was conducted during the period August 12 to 14, 1940.

Plot data show the upward trend of infestation during 1938 was followed by a marked decline during 1939, the infestation reaching its lowest ebb since the present infestation cycle began. An upward trend was again assumed during 1940.

The most aggressive infestation of 1940 was found to exist on the Sled Springs unit between Swamp and Crow Creeks.

An improvement occurred in the insect situation affecting other tree species.

No centers of infestation sufficiently aggressive to warrant control measures were found on the forest during 1940.

Table No. 1. Description of Check Plots

Areas and Units	Plot Name	Plot Location T.	R.	Sec. 1/2	Elevation	Type	Site	Pine Timbered Acres	Pine Volume as of Jan. 1, 1939	Board Feet per Acre
Grande Ronde										
Sled Springs	Crow Creek	2N	45E	10N	3650	20.5	4	270	3,870,560	14,300
Chesnimnus	Chico	3N	46E	18N	4050	20.5	5	200	2,108,240	10,500
Imnaha				21E 1/4						
Imnaha	Morgan Butte	3S	47E	22W 1/4	5000	20.5	3	320	3,384,795	10,500
	3 plots	940 acres						790	9,363,595	

Table No. 2. Summary of Ponderosa Pine Losses on Check Plots
Survey of 1940

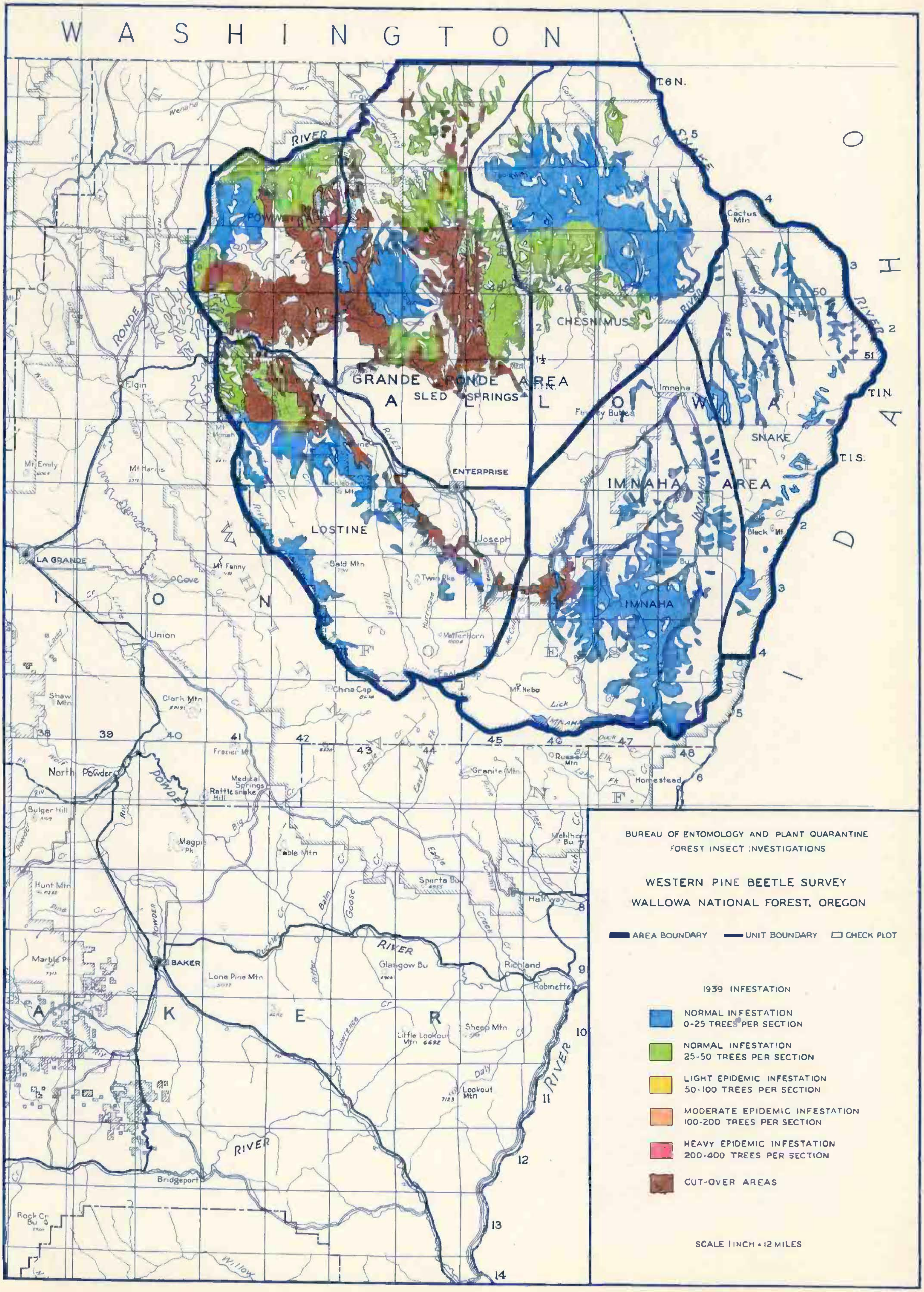
Areas and Plots	1939 Loss					1940 Loss					
	First Marking			Total		First Marking			Estimating Factor	Estimated Total	
	Date	Trees	Volume	Trees	Volume	Date	Trees	Volume		Trees	Volume
Grand Ronde											
Crow Creek	7-22	20	21,470	28	29,500	8-14	17	10,380	36.5	47	38,500
Chico	7-21	1	440	2	580	8-13	0	0	36.0	3	1,938
				30	30,080					50	40,438
Ixnaha											
Morgan Butte	7-29	0	0	1	1,400	8-12	0	0	35.0	2	2,340
Total all plots		21	21,910	31	31,480		17	10,380		52	42,778

Table No. 3. Recent Infestation Trends on Check Plots

Year of Loss	1938						1939						1940 Probable Loss					
Area and Plot	Trees Killed	Volume Bd.Ft.	Trees per Sec.	Bd.Ft. per Acre	% of Stand	Ratio 1938 to 1937	Trees Killed	Volume Bd.Ft.	Trees per Sec.	Bd.Ft. per Acre	% of Stand	Ratio 1939 to 1938	Trees Killed	Volume Bd.Ft.	Trees per Sec.	Bd.Ft. per Acre	% of Stand	Ratio 1940 to 1939
Grande Ronde																		
Crow Creek	51	39,860	121	147	1.02	2.45	28	29,500	66	72	.76	.74	47	38,500	111	143	1.00	1.30
Chico	40	25,160	128	125	1.08	1.92	2	580	6	3	.01	.02	3	1,938	10	10	.09	3.30
Area Total	91	65,020	124	138	1.07	2.23	30	30,080	36	64	.50	.47	50	40,438	65	86	.68	1.35
Imnaha																		
Morgan Butte	15	15,715	30	49	.46	1.00	1	1,400	2	4	.06	.09	2	2,340	4	7	.07	1.67
Totals for all Plots	106	80,735	86	102	.85	1.80	31	31,480	25	40	.33	.39	52	42,778	42	54	.46	1.36

Table No. 4. Estimated Ponderosa Pine Losses for 1939

Areas and Units	Ponderosa Pine Acreage: Total	Ponderosa Pine Acreage: Virgin	Volume of Pine M.B.M. Jan. 1 1939	Estimated 1939 Loss: Trees	Volume MBM	Trees per Sec.	Bd. Ft. per Acre	Percent of Stand
Grande Ronde								
Powwatka	65,640	35,700	215,000	3,000	1,200	29	18	.56
Sled Springs	95,660	42,540	439,800	4,100	3,400	27	37	.77
Chesnimnus	99,040	99,040	515,800	2,500	1,200	16	12	.23
Lostine	49,980	31,460	280,600	2,000	800	26	16	.29
	310,320	208,740	1,257,700 / 1451,200	11,600	6,600	24	21	.53
Imnaha								
Imnaha	85,380	81,540	331,700	420	250	3	3	.07
Snake	31,620	31,620	71,000	120	72	2	2	.10
	117,000	113,160	402,700	540	322	3	3	.08
Forest Totals	427,320	320,870	1,684,700	12,140	6,922	18	16	.41


WASHINGTON
OREGON
IDAHO
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SLED SPRINGS
CHESNIMUS
LOSTINE
IMNAHA AREA
IMNAHA
SNAKE
WALLOWA
UNION
WHITMAN N. F.
BAKER
ENTERPRISE
Joseph
Elgin
LA GRANDE
Cove
Union
North Powder
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